

Data Flow Diagram

MGMI311

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What is Data Flow Diagram?

- Data Flow Diagram (DFD) is the tool for showing program design
- It is a logical model of the flow of data through a system that shows how the system's boundaries, processes and data entities are logically related
- It has replaced flowcharts and pseudo code

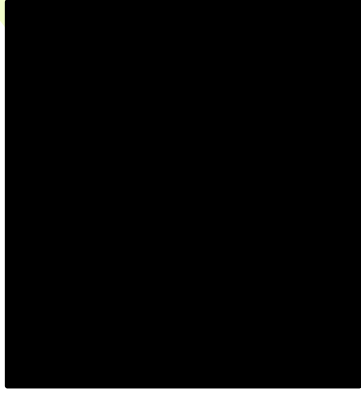
Why using Data Flow Diagram?

- DFDs are easier to understand by technical and non-technical audiences
- DFDs can provide a high level system overview, complete with boundaries and connections to other systems
- DFDs can provide a detailed representation of system components

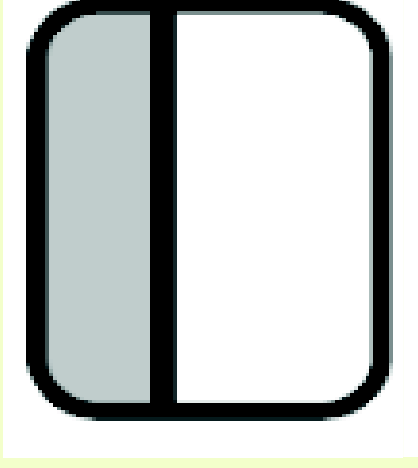
DFD Symbols

- | | |
|----------------------|---|
| 1) External Entities | Rectangular box |
| 2) Data Flow | Arrow headed lines |
| 3) Process | Bubble / Circle or
Rounded corner square |
| 4) Data Storage | Narrow opened
Rectangle |

DFD Symbols



External Entities



Process



Data Flow



Data Storage

How to Draw DFD

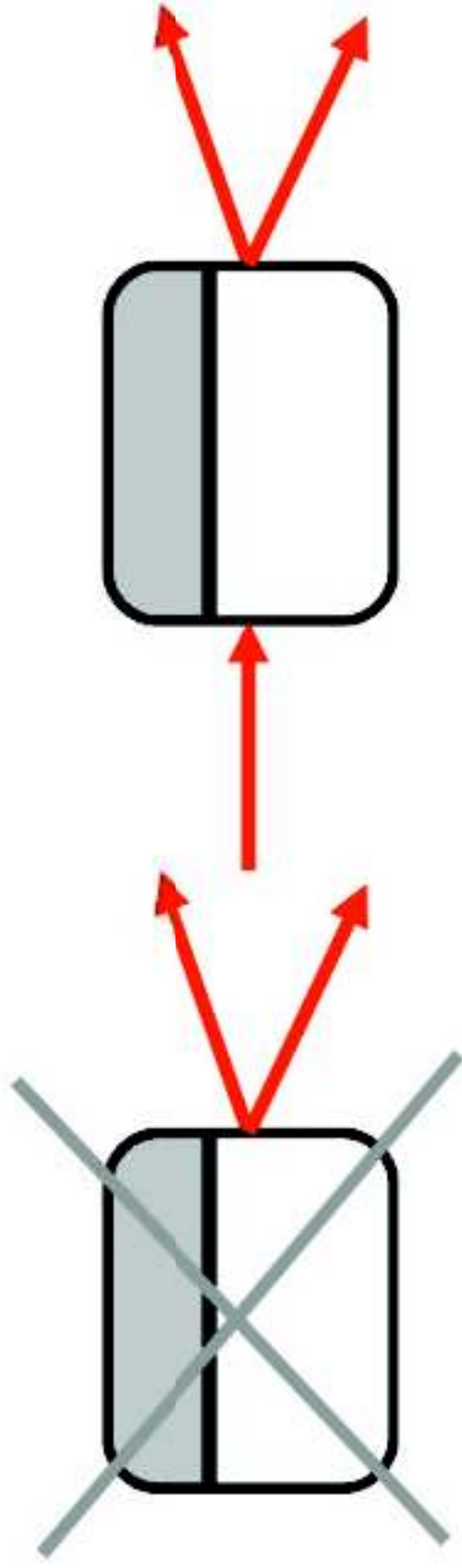
- 1) Define a list of external entities sending and receiving data
- 2) Define a list of processes that change that data
- 3) Define Data input and Data output for each process
- 4) Define Data Storage Locations

How to Draw DFD

- 5) Draw a DFD – context diagram
- 6) Draw a DFD fragments for each process
- 7) Details each process (Functional Decomposition)
- 8) Check Balance

DFD RULES

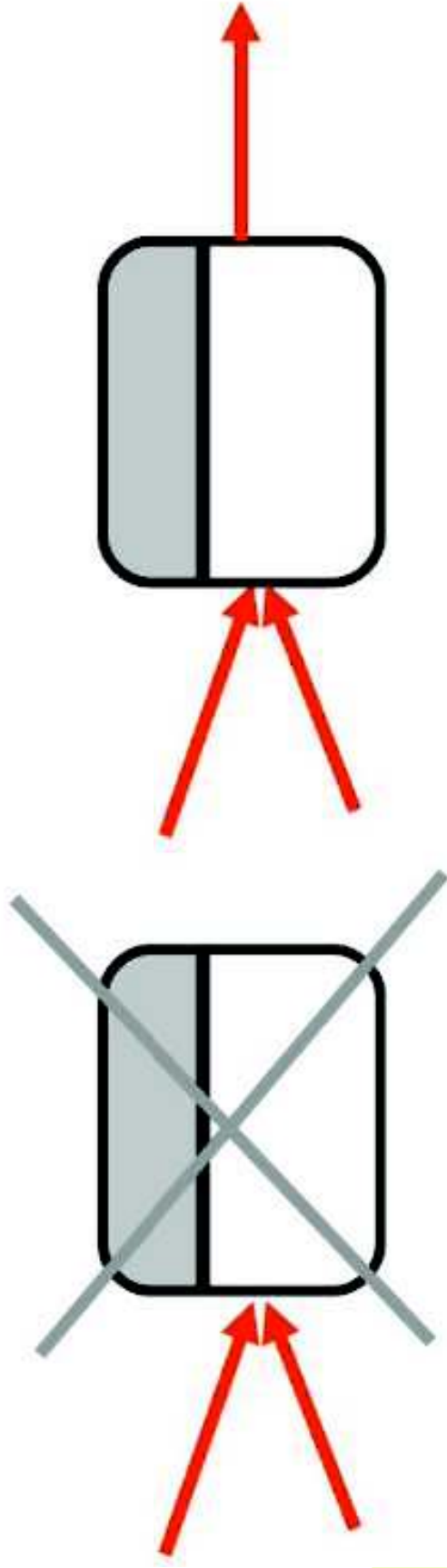
1



No process can have only outputs

DFD RULES

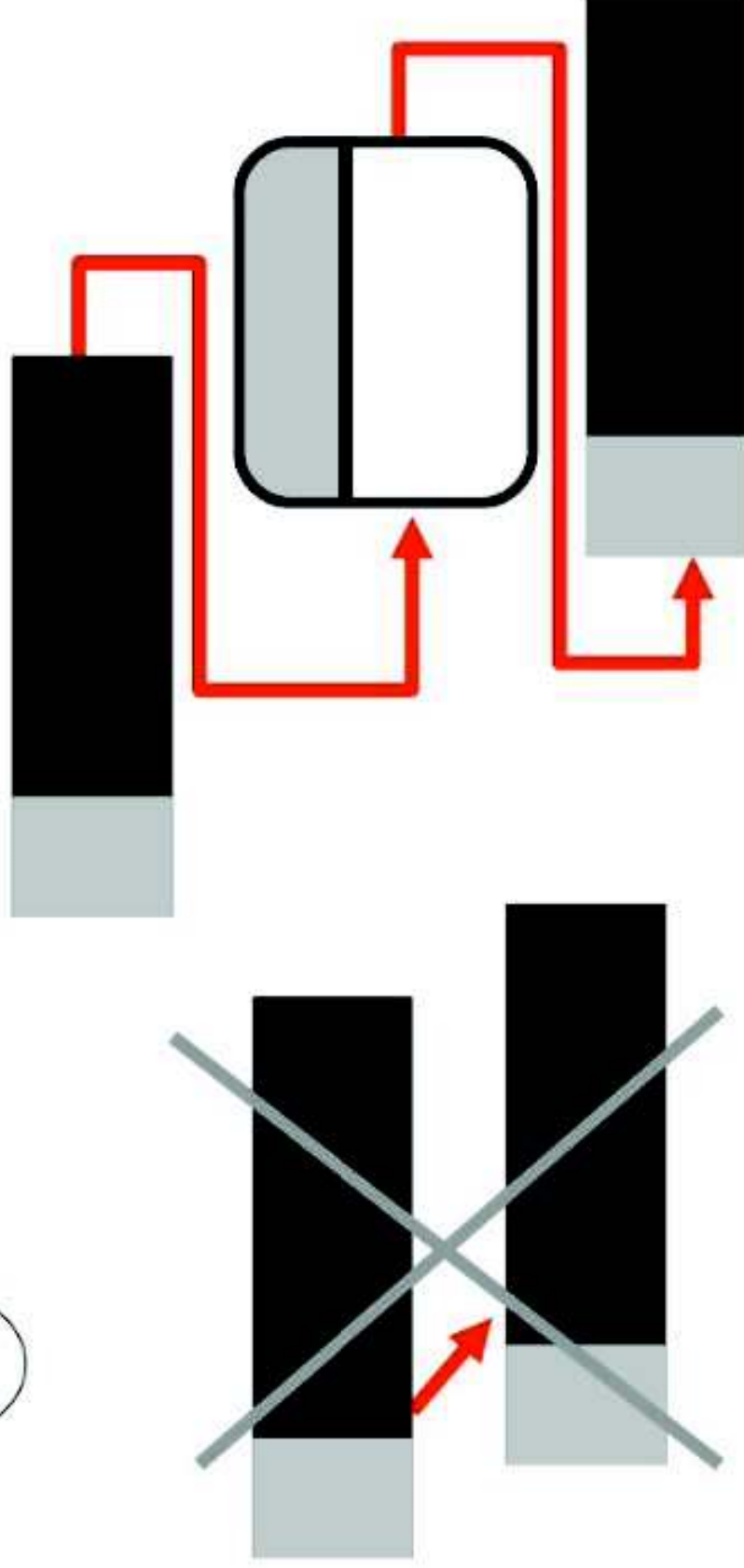
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No process can have only inputs

DFD RULES

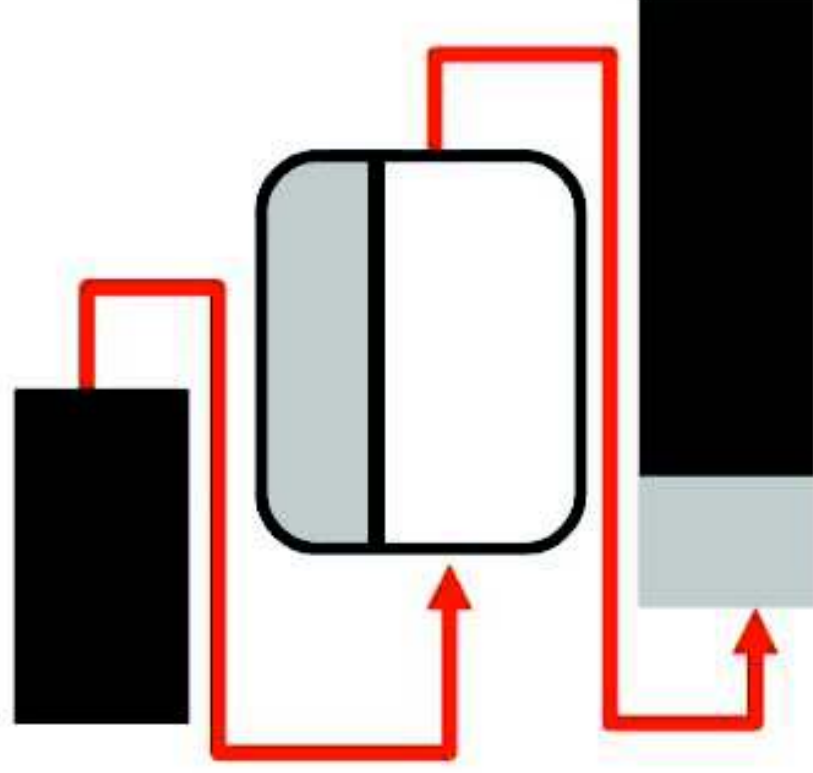
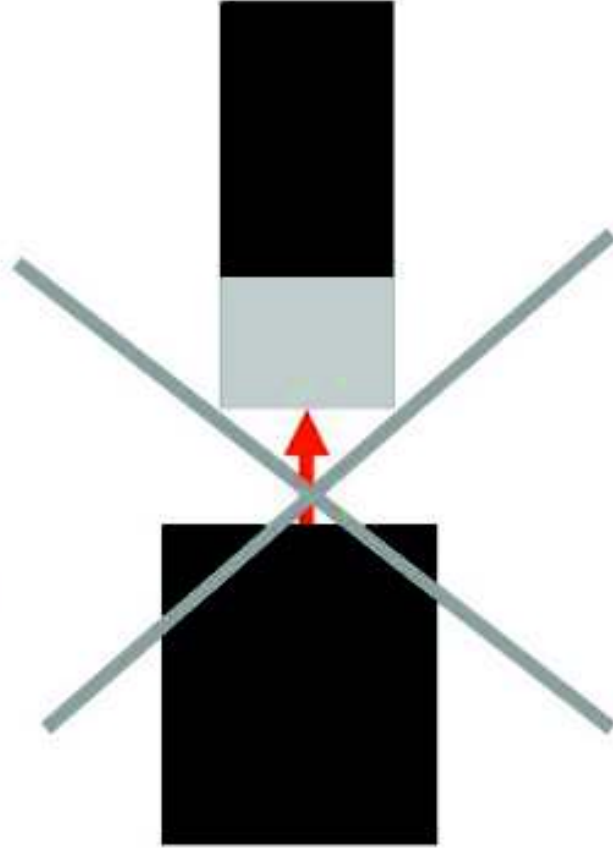
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Data cannot move directly from one data store to another

DFD RULES

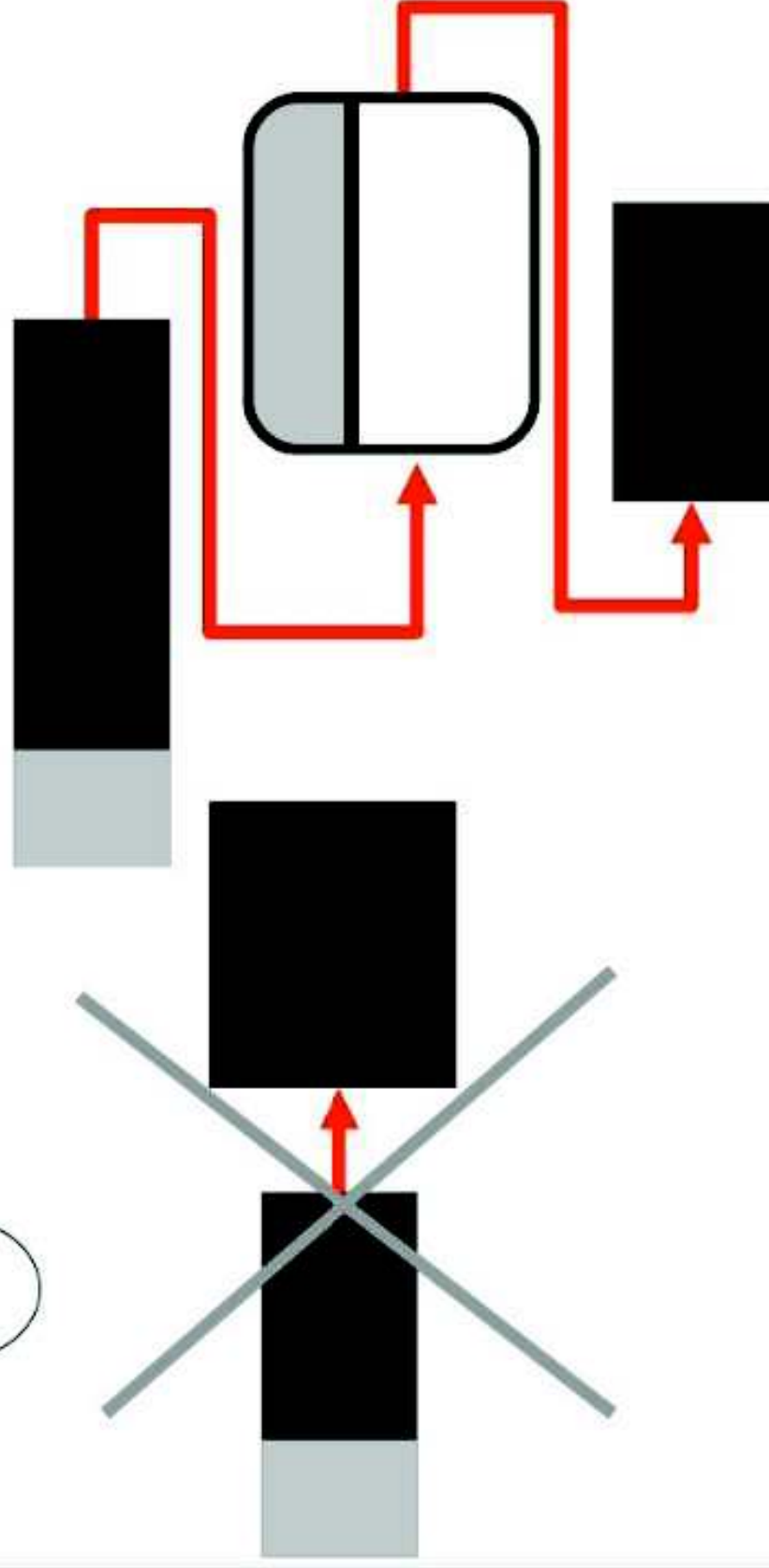
4



Data cannot move directly from an external entity to a data store

DFD RULES

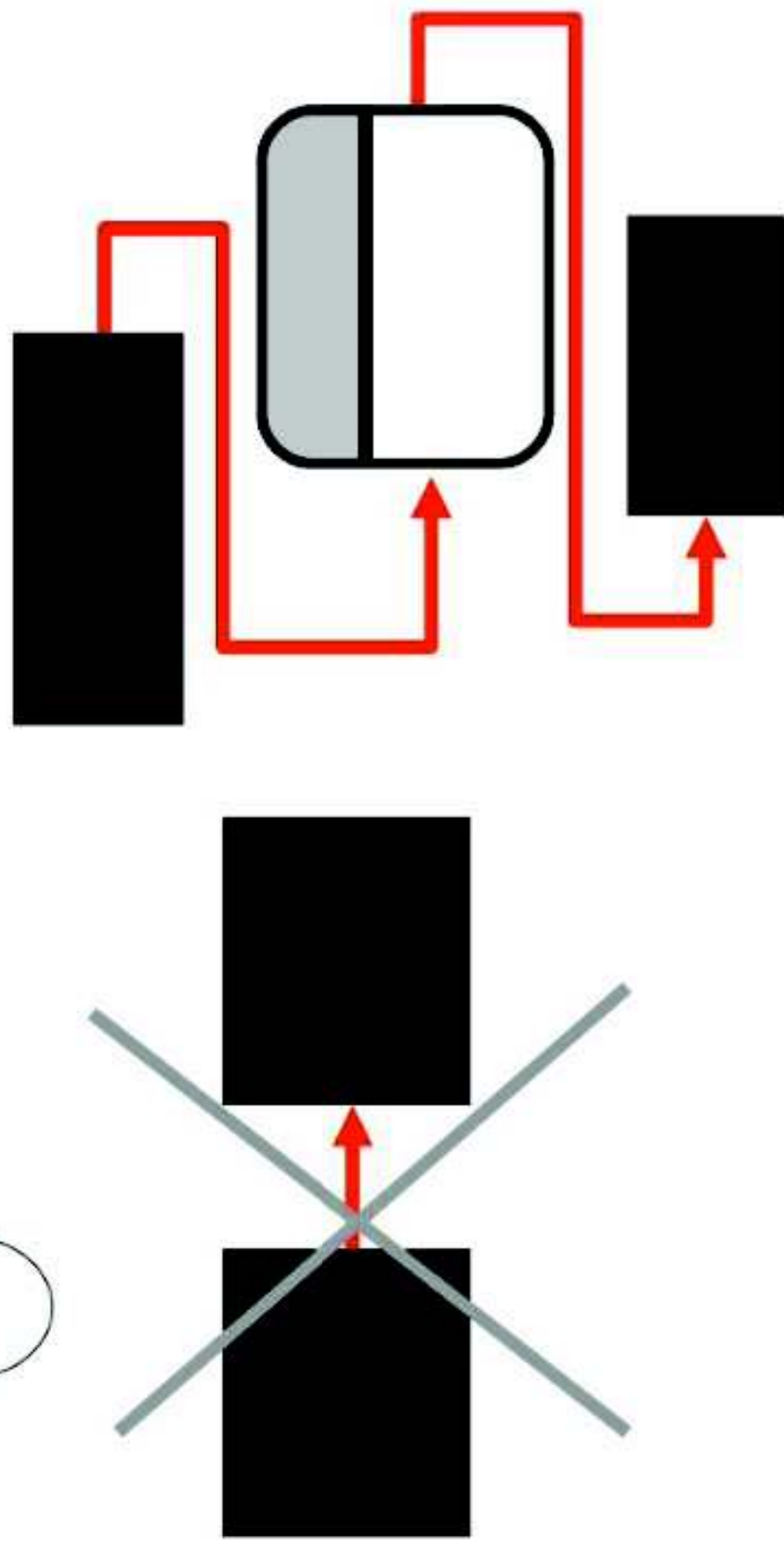
5



Data cannot move directly from a data store to an external entity (sink)

DFD RULES

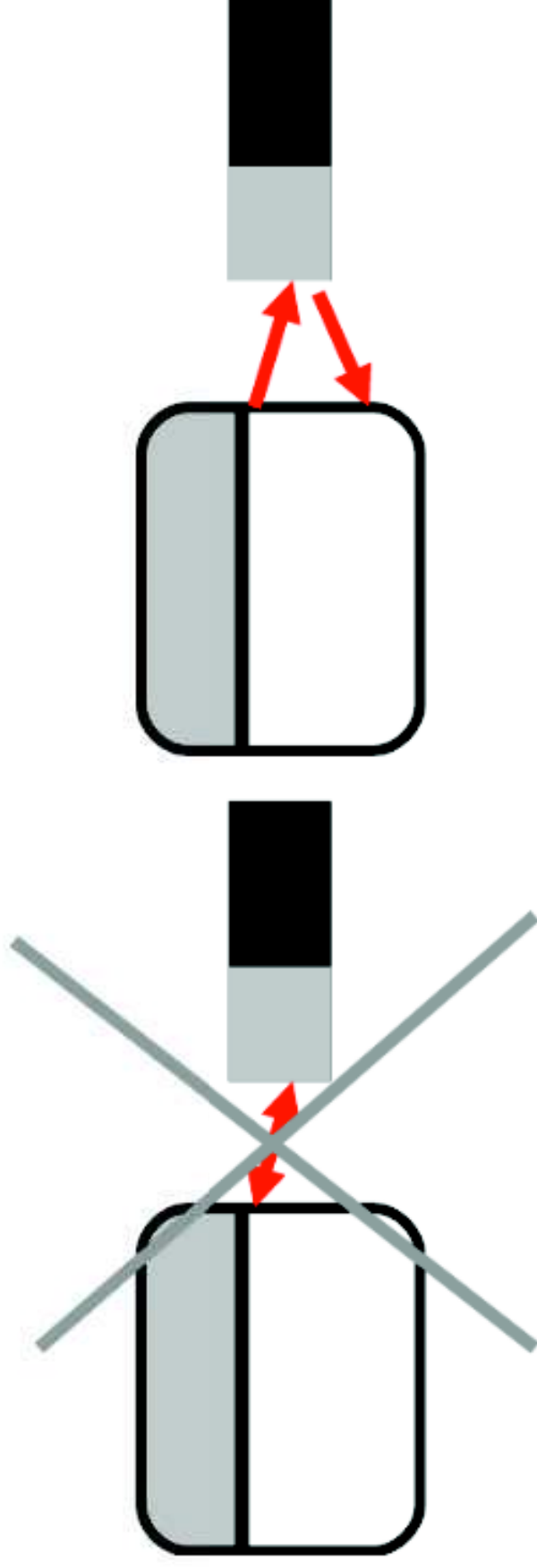
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Data cannot move directly from an external source to an external sink

DFD RULES

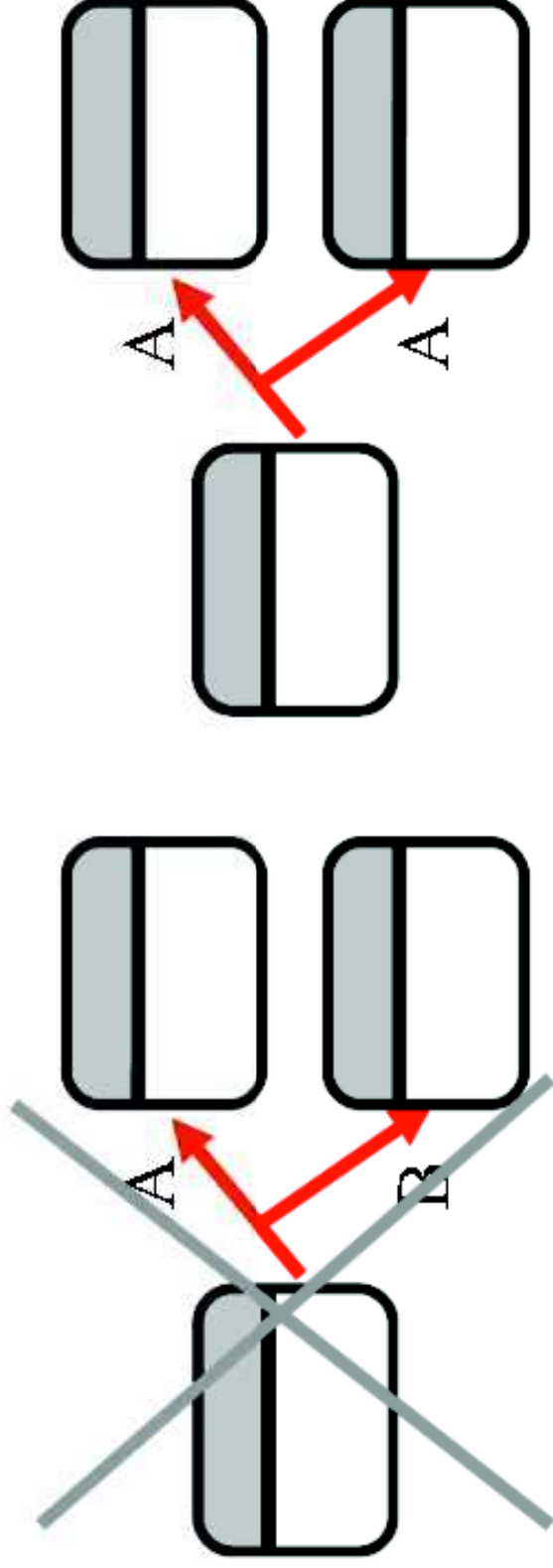
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A data flow has only one direction of flow between symbols

DFD RULES

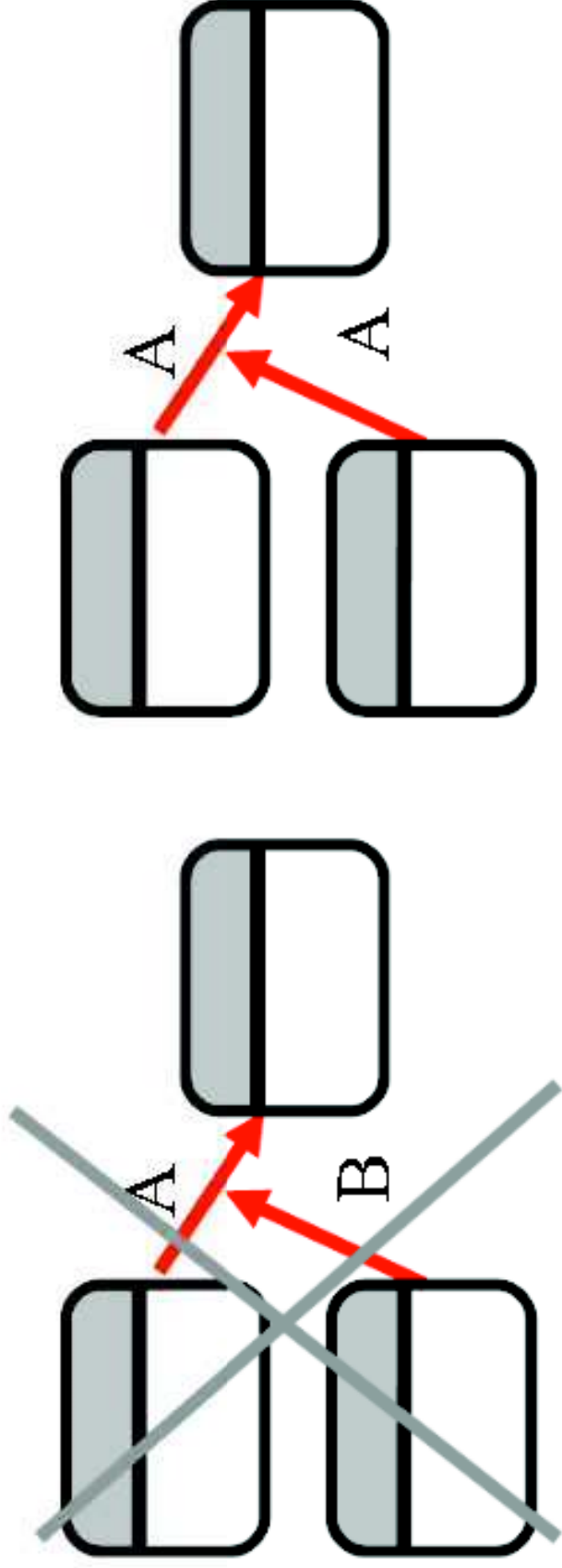
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A fork in data flow means only the exactly same data goes from a common location to two or more different processes

DFD RULES

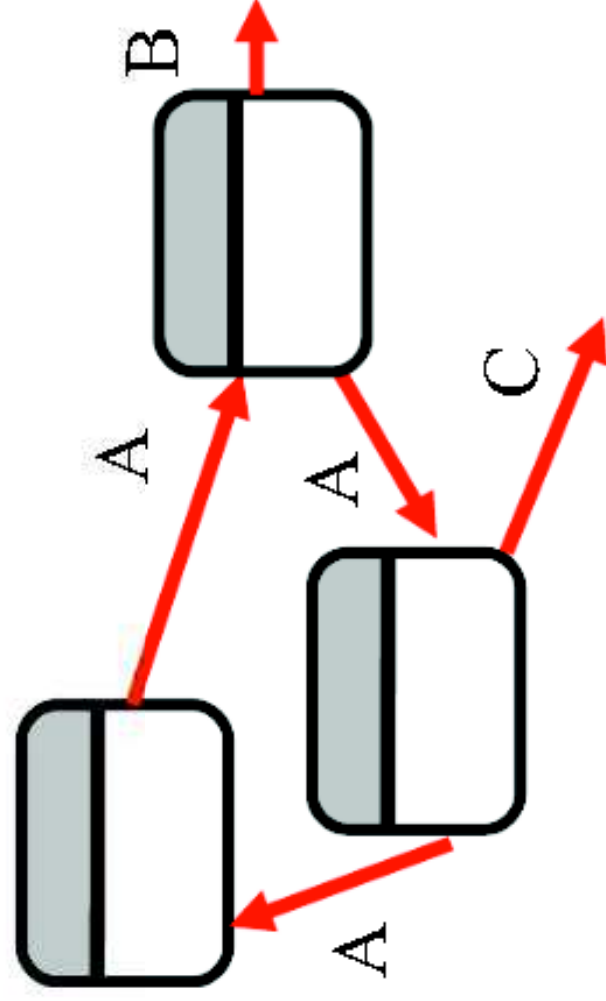
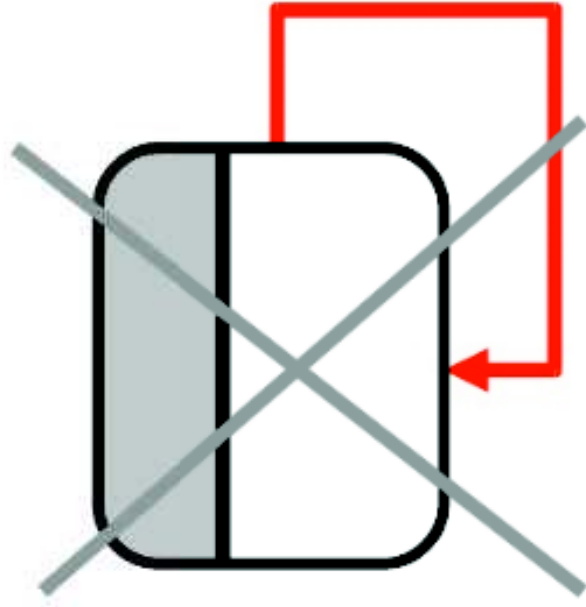
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A join in a data flow means that exactly same data goes from any of two or more different processes, data stores to a common location

DFD RULES

10



No recursive data flow on a process

DFD RULES

11



A data flow to a data store means update (delete or change)

DFD RULES

12



A data flow from a data store means retrieve or use

Strengths of DFDs

- A DFD is an excellent tool for summarizing and organizing detailed information about a system's boundaries, processes and data entities
- It helps the analyst, the user, and the responsible managers visualize alternative high-level logical system designs.

Strengths of DFDs

- The elements of a data flow diagram lead directly into physical design:
 - Processes Programs and procedures
 - Data flows Composites
 - Data Storage Data entities, Files and Database

Notice

- Data flows show how the data move between the system's components, but they do not show the flow of control
- Focus on 'WHAT' the system does while discarding the physical details of how it work